PUNA GEOTHERMAL VENTURE

HAWAI'I

May 16, 2014

Mr. George Robin
U.S. Environmental Protection Agency (EPA), Region IX
Ground Water Office (WTR-9)
75 Hawthorne Street
San Francisco, CA 94105

SUBJECT: APPROVAL TO PERFORM MAINTENANCE WORK TO KAPOHO STATE 3 (KS-3)

Dear Mr. Robin:

In accordance with the Underground Injection Control (UIC) Permit No. HI596002 and pursuant to the U.S. Environmental Protection Agency (EPA), Puna Geothermal Venture (PGV) respectively request EPA approval to perform a hang down liner replacement at injection well KS-3. Additionally, PGV requests a variance to the 60 day notification in order to expedite a return to service of the KS-3 well. Since KS-3 has been temporarily taken out of service, this is necessary in order to return the plant to full production.

A rapid loss of nitrogen pressure in the annular space was observed on April 14, 2014 and the well was subsequently removed from service. A camera survey was performed on April 18. It was determined that the upper portion of the liner consisting of a 13CR alloy casing had severe pitting and was breached at 738'. Additional camera surveys were taken in injection wells KS-1A and KS-11 which showed no similar issues in their liners.

PGV anticipates the procuring of equipment, materials and personnel will take 1 month. The proposed work will commence during the weeks of June 16th-30th or shortly thereafter. The duration of these maintenance activities are expected to last for approximately two weeks.

The enclosed work plan procedure will be used the KS-3 well. This work plan will be reviewed by all contractors, consultants and plant personnel prior to the commencement of work. Discussions will include safety, environmental, equipment, and manpower requirements.

The KS-3 wellhead surface location is N 19° 28' 31.4" W 154° 53' 29.3".

In general, the following equipment will be used:

A. Blowout Preventer Equipment ("BOPE"), used to prevent the flow of fluids out of the well and into the atmosphere.

B. Water Resources International drill rig, used to perform maintenance and/ or repairs.

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an ORMAT company

Should there be any questions, please do not hesitate to call me at (808) 965-2847.

Sincerely,

Cliff Townsend
Plant Manager

Enclosed: KS-3 Liner Repair Procedures

CC: Keoki Wells

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KS-3 Liner Repair 2014

1. Prepare Location
    - Release N2 pressure through abatement system
    - Flow raw water through upper swab valve
    - Remove surface piping
    - Change water over to one annular wing valve for N2 after nitrogen has been released and continue pumping water at around 100 gpm.
2. Wellhead Pressure Monitoring
    - Install Local pressure gauge
    - Hook up pressure transmitter to read pressure at CSC
3. Run camera to check integrity of hang down liner. (Completed 4-18-2014)
    - Shut down water into well and monitor pressure for one hour.
    - Restart flow of water down annular space
    - Run camera to check condition of pipe threads on hanger and connections of hang down liner
4. Rig up drilling rig and associated equipment
    - Nipple up and function test BOPE with a representative from DLNR present to witness.
    - BOPE to consist of adapter spool, 1 – 3000 # Double gate preventer equipped with one set blind rams and one set 5 " casing rams, 1- 3000# Annular preventer.
5. Pull 5" hang down liner
    - Continue pumping water through wing valves and monitor WHP at all times.
    - Screw into top of donut hanger with 5" Drill pipe with safety valve installed in the closed position and torque connection
    - Loosen donut hold down studs and remove
    - Pull up 40,000# to verify drill pipe make up, slack off and check torque on connection
    - Pull donut and 5" liner. Current liner assembly total weight 70,000#
    - Replace hold down nuts after pulling donut loose.
    - Break down donut and lay down
    - Pull and lay down 5" 18# 13 CR 110 casing, having safety subs on floor for both 5" casing connections at all times.
6. Rerun Liner
    - Rebuild donut hanger as needed and install new compression seal and o-ring.

- Run new 5" 23.2# T95 casing back into well, using recommended torque specifications, monitoring WHP at all times with water flowing through wing valves
- Pick up new donut hanger on joint of casing. Paint recess for hold down bolts with yellow paint
- Land casing and donut hanger into hanger spool with drill pipe, checking for proper placement by removing hold down bolts and checking to see yellow painted recess.
- Make up hold down bolts and tighter packing nuts.

7. Test Hang down liner for integrity
    - Pump up annulas with Nitrogen to out of service level.
    - Monitor pressure on Casing and Wellbore
    - Check all surface equipment for leaks
    - Close master valve and rig down BOPE and drilling equipment
8. Return well to injection service
    - Install flow tee and surface injection piping